

Serial No.: 09/858,099
Group Art Unit: 2661
Examiner: Ian N. Moore

REMARKS/ARGUMENTS

Claims 1 through 18 remain in this application.

Rejections to the Claims under 35 U.S.C. 103

Independent Claim 1 and dependent claims 2 through 7

The Office Action rejected claims 1, 2, 13, 14, 16 and 17 under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent No. 5,870,212 to Nathan et al. (the Nathan reference) in view of U.S. Patent No. 6414765 to Li et al (the Li reference). However, the Nathan reference and the Li reference, either alone or in combination, fail to teach or suggest the requirements of the claims.

Claim 1 states, "a pair of network elements; two or more working spans coupled between said pair of network elements for carrying communications traffic between said pair of network elements, each working span carrying said communications traffic over a plurality of channels associated with one or more rings; a shared protection span coupled between said network elements, said shared protection span providing a plurality of channels; wherein said network elements include circuitry for concurrently switching communication traffic on rings associated with different working spans to respective channels of said shared protection span."

As seen in Figure 4 of the specification and explained in the specification at pages 7-8, paragraphs 27-29, each of the working spans 16ab support a plurality of n wavelengths or n distinct channels, and the shared protect span 18ab includes a plurality of shared protection channels SP1 . . . SPn. Also shown in Figure 8, Figure 9 and described in the specification on pages 9 through 11, paragraphs 32 through 38, the shared protect span 18ab can be used to correct simultaneous failures on multiple ring networks. For example, in Figure 8, a failure of λ_{12} on span 16de in a first ring will be switched to the protection spans by network element 12e in the first ring and carried over a first channel SP2 of the shared protection span 18ab. Another failure of λ_{12} on span 16hi in a second ring will be switched by network element 12h to the protection spans in the second ring and carried over a second channel SP1 of the shared protection span 18ab. Thus, communication traffic on rings associated with different working spans are concurrently switched to respective channels of the shared protection span. The

Serial No.: 09/858,099
Group Art Unit: 2661
Examiner: Ian N. Moore

present invention has significant advantages over the prior art, as explained at page 3, paragraph 11. In the prior art, such as WO99/23773 to Elahmadi et al., a shared protection span can only be used to protect against a failure on one ring at a time. Traffic outage will occur if another failure occurs on another ring.

Though the Office Action rejected the claims over the Nathan reference in view of the Li reference, the Nathan reference and the Li reference, either alone or in combination, fail to teach or suggest the requirements of the claims. First, with respect to the Nathan reference, it does not disclose the requirement of claim 1, *inter alia*, of "wherein said network elements include circuitry for concurrently switching communication traffic on rings associated with different working spans to respective channels of said shared protection span." It only describes that spare optical channel 860 in Figures 8, 9 and 10 can be used to protect against a failure on one ring at a time. As seen in Figures 8, 9 and 10, and stated at column 7, lines 12 and 13 (emphasis added), "Spare optical channel 860 can be optically coupled into network 802 *or* network 804 by OCCS 852 and 834." Thus, as stated at column 7, lines 13 through 19, the spare optical channel 860 can be used by network 802 if there is a break between nodes A and F, nodes E and F, or nodes D and E. *Alternatively*, network 804 may use the spare optical channel 860 if there is a break between nodes A and B, nodes B and C or nodes C and D. The spare optical channel 860 may not be used concurrently for switching communication on traffic on both network rings 802 and 804. And since there is no description of spare channel 860 supporting multiple wavelengths, such an interpretation is inoperable. Thus, the Nathan reference teaches away from the present invention and is in fact inoperable to meet the requirements of the claims.

Similarly, the Li reference does not disclose the requirement of claim 1, *inter alia*, of "wherein said network elements include circuitry for concurrently switching communication traffic on rings associated with different working spans to respective channels of said shared protection span." The Office Action states, last paragraph page 3 to first paragraph page 4, that, "Li teaches switching circuitry (See Fig. 4B, protection switch 10) for concurrently coupling channels to respective channels of said shared protection span (also see Fig. 4A; col. 6, line 60 to col. 7, line 16; note that protection switch supports the protection of each channel wavelength for concurrent switching)." However, the Li reference nowhere discloses a shared protection span

Serial No.: 09/858,099
Group Art Unit: 2661
Examiner: Ian N. Moore

as claimed in the Office Action. The Li reference only discloses a single optical shared protection ring, as seen in Figure 2A and 3A and 4A, and described at column 4, lines 38 through 41. The single optical shared protection ring described in the Li reference has 2 fibers. As described at column 4, lines 44 through 49, Fiber 1 propagates working wavelengths and protection wavelengths in a counter clockwise direction. Fiber 2 propagates working wavelengths and protection wavelengths in a clockwise direction. So Fiber 1 working wavelengths can be switched to Fiber 2 protection wavelengths and Fiber 2 working wavelengths are switched to Fiber 1 protection wavelengths, as described at column 6, line 60 through column 7 line 3. There is no shared protection span or channels or wavelengths shown in the Li reference for the two working spans. The only switching occurring in the Li reference is within a single ring from the working channels on one fiber in the one ring to the protections channels in the other fiber of the one ring. Thus, the Li reference necessarily fails to disclose concurrently switching communication traffic on rings associated with different working spans to respective channels of said shared protection span, as stated in the claims.

Furthermore, the combination of the Nathan reference and the Li reference fails to suggest the requirement of claim 1, *inter alia*, of "wherein said network elements include circuitry for concurrently switching communication traffic on rings associated with different working spans to respective channels of said shared protection span." As explained above, the Nathan reference only describes that spare optical channel 860 in Figures 8, 9 and 10 can be used to protect against a failure on one ring at a time, and the Li reference describes only switching within a single ring from the working channels on one fiber in the one ring to the protections channels in the other fiber of the one ring.

Neither reference contemplates, describes or suggests a shared protection span for concurrently switching traffic from rings associated with different working spans. "The court must be ever alert not to read obviousness into an invention on the basis of the applicant's own statements; that is, we must view the prior art without reading into that art appellant's teachings." *Application of Nomiya*, 184 U.S.P.Q. 607, 612 (Cust. & Pat.App. 1975). Only the present specification teaches network elements that include circuitry for concurrently switching communication traffic on rings associated with different working spans to respective channels of

Serial No.: 09/858,099
Group Art Unit: 2661
Examiner: Ian N. Moore

said shared protection span. For these reasons, the Nathan reference and the Li reference, either alone or in combination, fail to teach or suggest the requirements of the claims.

Independent Claim 8 and dependent claims 9 through 12

Claims 8 through 12 were rejected under 35 U.S.C. 103(a) as being unpatentable over the Nathan reference in view of the Li reference and, as stated in the Office Action, "*further in view of Fee (U.S. Patent No. 6,735,39).*" The patent number was not complete in the Office Action and no reference to Fee was found with this incomplete number. However, there is a reference to Elahmadi et al with U.S. Patent No. 6,735,392 (the "Elahmadi reference") that was previously cited by the Examiner. Thus, it is assumed that Office Action meant to reference the Elahmadi reference and not Fee in this rejection. After a careful review of the above references and the office action, the Nathan reference, the Li reference and the Elahmadi reference, either alone or in combination, fail to disclose or suggest the requirements of the claims.

Independent claim 8 states, "passing communications traffic between a pair of network elements, where the pair of network elements are coupled by two or more working spans each carrying communications traffic between the pair of network elements over a plurality of channels associated with one or more rings and by a shared protection span supporting a plurality of channels over which communication traffic may be passed; in the event of failures in channels associated with two or more rings associated with different working spans, concurrently transferring communication traffic associated with each of said two or more rings over said shared protection span."

With respect to the Nathan reference, it does not disclose the requirement of claim 8, *inter alia*, of "in the event of failures in channels associated with two or more rings associated with different working spans, concurrently transferring communication traffic associated with each of said two or more rings over said shared protection span." It only describes that spare optical channel 860 in Figures 8, 9 and 10 can only be used to protect against a failure on one ring at a time. As seen in Figures 9 and 10, and stated at column 7, lines 12 and 13 (emphasis

Serial No.: 09/858,099
Group Art Unit: 2661
Examiner: Ian N. Moore

added), "Spare optical channel 860 can be optically coupled into network 802 *or* network 804 by OCCS 852 and 834."

Similarly, the Li reference does not disclose the requirement of claim 8, *inter alia*, of "in the event of failures in channels associated with two or more rings associated with different working spans, concurrently transferring communication traffic associated with each of said two or more rings over said shared protection span." The Office Action states on page 11, first full paragraph, that, "Li teaches switching circuitry (See Fig. 4B, protection switch 10) for concurrently coupling channels to a shared protection span (also see Fig. 4A; col. 6, line 60 to col. 7, line 16; note that protection switch supports the protection of each channel wavelength for concurrent switching)." However, the Li reference nowhere discloses a shared protection span as claimed in this quote from the Office Action. The Li reference only discloses a single optical shared protection ring, as seen in Figure 2A and 3A and 4A, and described at column 4, lines 38 through 41. The single optical shared protection ring described in the Li reference has 2 fibers. As described at column 4, lines 44 through 49, Fiber 1 propagates working wavelengths and protection wavelengths in a counter clockwise direction. Fiber 2 propagates working wavelengths and protection wavelengths in a clockwise direction. So Fiber 1 working wavelengths can be switched to Fiber 2 protection wavelengths and Fiber 2 working wavelengths are switched to Fiber 1 protection wavelengths, as described at column 6, line 60 through column 7 line 3. There is no shared protection span or channels or wavelengths shown in the Li reference for the two working spans. The only switching occurring in the Li reference is within a single ring from the working channels on one fiber in the one ring to the protection channels in the other fiber of the one ring. Thus, the Li reference necessarily fails to disclose concurrently switching communication traffic on rings associated with different working spans to respective channels of said shared protection span, as stated in the claims.

With respect to the Elahmadi reference, it teaches away from the present invention as it explicitly states at column 6, lines 28 and 29 that, "Rings 102 and 104 cannot use their protect channels at the same time." Since the Elahmadi reference teaches that the rings 102 and 104 cannot use their protect channels at the same time, the Elahmadi reference teaches away from and fails to describe the requirement of claim 8, *inter alia*, of "in the event of failures in channels

Serial No.: 09/858,099
Group Art Unit: 2661
Examiner: Ian N. Moore

associated with two or more rings associated with different working spans, concurrently transferring communication traffic associated with each of said two or more rings over said shared protection span.”

Furthermore, the combination of the Nathan reference, Li reference and the Elahmadi reference fails to suggest the requirement of claim 8, *inter alia*, of “in the event of failures in channels associated with two or more rings associated with different working spans, concurrently transferring communication traffic associated with each of said two or more rings over said shared protection span.” The Office Action asserts in Page 12, third paragraph, with respect to Claim 8 that the Elahmadi reference, teaches concurrently transferring communication traffic associated with each of said two or more rings over said protection path. However, it cites Figure 6 which does not even include a shared protection path. When the Elahmadi reference does illustrate a shared protect fiber 105 in Figure 7, the Elahmadi reference explicitly teaches away from the requirement stating at column 6, at lines 28 and 29, that, “Rings 102 and 104 cannot use their protect channels at the same time.” And as explained above, the Nathan reference only describes that spare optical channel 860 in Figures 8, 9 and 10 can be used to protect against a failure on one ring at a time, and the Li reference describes only switching within a single ring from the working channels on one fiber in the one ring to the protections channels in the other fiber of the one ring.

None of the references describes or suggests concurrently transferring communication traffic associated with each of two or more rings over a shared protection span. “The court must be ever alert not to read obviousness into an invention on the basis of the applicant's own statements; that is, we must view the prior art without reading into that art appellant's teachings.” *Application of Nomiya*, 184 U.S.P.Q. 607, 612 (Cust. & Pat.App. 1975). Only the present specification teaches network elements for concurrently transferring communication traffic associated with each of two or more rings over a shared protection span. For these reasons, the Nathan reference and the Li reference and the Elahmadi reference, either alone or in combination, fail to teach or suggest the requirements of the claims.

Serial No.: 09/858,099
Group Art Unit: 2661
Examiner: Ian N. Moore

Independent Claim 13 and dependent claims 14 through 18

The Office Action rejected claims 1, 2, 13, 14, 16 and 17 under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent No. 5,870,212 to Nathan et al. (the Nathan reference) in view of U.S. Patent No. 6,414,765 to Li et al (the Li reference). However, the Nathan reference and the Li reference, either alone or in combination, fail to teach or suggest the requirements of the claims. Independent claim 13 states, "interface circuitry for coupling to two or more incoming working spans and two or more respective incoming protection spans, each of said working spans operable to carry communications traffic over a plurality of channels associated with one or more rings; and switching circuitry for concurrently coupling channels from different incoming protection spans to a shared protection span."

With respect to the Nathan reference, it does not disclose or suggest the requirement of claim 13, *inter alia*, of "switching circuitry for concurrently coupling channels from different incoming protection spans to a shared protection span." The Nathan reference only describes that spare optical channel 860 in Figures 8, 9 and 10 can only be used to protect against a failure on one ring at a time. As seen in Figures 9 and 10, and stated at column 7, lines 12 and 13 (emphasis added), "Spare optical channel 860 can be optically coupled into network 802 *or* network 804 by OCCS 852 and 834."

The Li reference also does not disclose the requirement of claim 13, *inter alia*, of "switching circuitry for concurrently coupling channels from different incoming protection spans to a shared protection span." The Office Action states, last paragraph page 5, that, "Li teaches switching circuitry (See Fig. 4B, protection switch 10) for concurrently coupling channels to a shared protection span (also see Fib. 4A; col. 6, line 60 to col. 7, line 16; note that protection switch supports the protection of each channel wavelength for concurrent switching)." However, the Li reference nowhere discloses a shared protection span as claimed in the Office Action. The Li reference only discloses a single optical shared protection ring, as seen in Figure 2A and 3A and 4A, and described at column 4, lines 38 through 41. The single optical shared protection ring described in the Li reference has 2 fibers. As described at column 4, lines 44 through 49, Fiber 1 propagates working wavelengths and protection wavelengths in a counter clockwise

Serial No.: 09/858,099
Group Art Unit: 2661
Examiner: Ian N. Moore

direction. Fiber 2 propagates working wavelengths and protection wavelengths in a clockwise direction. So Fiber 1 working wavelengths can be switched to Fiber 2 protection wavelengths and Fiber 2 working wavelengths are switched to Fiber 1 protection wavelengths, as described at column 6, line 60 through column 7 line 3. There is no shared protection span or channels or wavelengths shown in the Li reference. The only switching occurring in the Li reference is within a single ring from the working channels on one fiber in the one ring to the protections channels in the other fiber of the one ring. Thus, the Li reference necessarily fails to disclose switching circuitry for concurrently coupling channels from different incoming protection spans to a shared protection span, as stated in the claims.

Furthermore, the combination of the Nathan reference and the Li reference fails to suggest the requirement of claim 13, *inter alia*, of "switching circuitry for concurrently coupling channels from different incoming protection spans to a shared protection span." As explained above, the Nathan reference only describes that spare optical channel 860 in Figures 8, 9 and 10 can be used to protect against a failure on one ring at a time, and the Li reference describes only switching within a single ring from the working channels on one fiber in the one ring to the protections channels in the other fiber of the one ring.

Neither reference contemplates, describes or suggests a shared protection span for concurrently switching traffic from different incoming protection spans. "The court must be ever alert not to read obviousness into an invention on the basis of the applicant's own statements; that is, we must view the prior art without reading into that art appellant's teachings." *Application of Nomiya*, 184 U.S.P.Q. 607, 612 (Cust. & Pat.App. 1975). Only the present specification teaches network elements that include switching circuitry for concurrently coupling channels from different incoming protection spans to a shared protection span. For these reasons, the Nathan reference and the Li reference, either alone or in combination, fail to teach or suggest the requirements of the claims.

Serial No.: 09/858,099
Group Art Unit: 2661
Examiner: Ian N. Moore

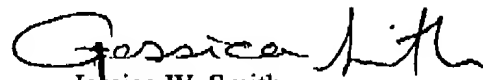
CONCLUSION

For the above reasons, the foregoing amendment places the Application in condition for allowance. Therefore, it is respectfully requested that the rejection of the claims be withdrawn and full allowance granted. Should the Examiner have any further comments or suggestions, please contact Jessica Smith at (972) 477-9109.

Respectfully submitted,

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